AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Claim 1 (original): A process for staining sperm cells, the process comprising forming a staining mixture containing intact viable sperm cells and a DNA selective fluorescent dye, and subjecting the staining mixture to a temperature in excess of 40°C.

Claim 2 (original): The process of claim 1, wherein the dye is a UV excitable or a visible light excitable dye.

Claim 3 (original): The process of claim 2, wherein the dye is selected from the group consisting of a bisbenzimide, SYBR-14, and a conjugate, an analog, or a derivative thereof.

Claim 4 (original): The process of claim 3, wherein the dye is selected from the group consisting of Hoechst 33342, Hoechst 33258, SYBR-14, and 6-{[3-((2Z)-2-{[1-(difluoroboryl)-3,5-dimethyl-1*H*-pyrrol-2-yl]methylene}-2*H*-pyrrol-5-yl)propanoyl]amino}-*N*-[3-(methyl{3-[({4-[6-(4-methylpiperazin-1-yl)-1*H*,3'*H*-2,5'-bibenzimidazol-2'-yl]phenoxy}acetyl)amino]propyl}amino)propyl]hexanamide.

Claim 5 (original): The process of claims 1, wherein the staining mixture is subjected to the temperature for a period of time sufficient to allow the dye to bind the DNA such that X and Y bearing sperm cells can be differentially sorted based upon fluorescence.

Claim 6 (original): The process of claim 5, wherein the period of time is from about 1 minute to about 160 minutes.

Claim 7 (original): The process of claim 5, wherein the period of time is less than about 60 minutes.

Claim 8 (original): The process of claim 5, wherein the period of time is less than about 30 minutes.

Claim 9 (original): The process of claim 5, wherein the dye concentration is from about 0.1μM to about 1000μM.

Claim 10 (original): The process of claim 9, wherein the dye concentration is from about 100μM to about 600μM.

Claim 11 (original): The process of claim 5, wherein the staining mixture is subjected to a temperature in excess of about 41°C.

Claim 12 (original): The process of claim 11, wherein the staining mixture is subjected to a temperature of between about 41°C and about 50°C.

Claim 13 (original): The process of claim 12, wherein the staining mixture is subjected to a temperature of between about 41°C and about 47°C.

Claim 14 (original): The process of claim 13, wherein the staining mixture is subjected to a temperature of between about 42°C and about 45°C.

Claim 15 (original): The process of claim 14, wherein the staining mixture is subjected to a temperature of about 43°C.

Claim 16 (original): The process of claim 1, wherein the step of forming a staining mixture comprises combining a buffer with the sperm cells.

Claim 17 (original): The process of claim 16, wherein the buffer is combined with the sperm cells to form a sperm suspension, and the sperm suspension is combined with a DNA selective dye to form the staining mixture.

Claim 18 (currently amended): The process of claim 1, wherein the step of forming a staining mixture comprises combining a buffer with a DNA selective dye to form a buffered [[bye]] dye solution, and combining the buffered dye solution with the sperm cells to form the staining mixture.

Claim 19 (currently amended): The process of claim 1, further comprising the step of combining [[the]] a quencher with the staining mixture.

Claim 20 (original): The process of claim 19, wherein the quencher is selected from the group consisting of FD&C #40 and propidium iodide.

Claim 21 (original): The process of claim 20, wherein the quencher is FD&C #40.

Claim 22 (original): The process of claim 20, wherein the quencher is FD&C #40 and the dye is Hoechst 33342.

Claim 23 (original): The process of claim 20, wherein the quencher is propidium iodide and the dye is SYBR-14.

Claim 24 (original): The process of claim 1, wherein the staining mixture further contains a motility inhibitor.

Claim 25 (original): The process of claim 1, wherein the step of forming a staining mixture comprises combining a motility inhibitor with the sperm cells to form an inhibited sperm suspension, and combining the inhibited sperm suspension with a DNA selective dye to form the staining mixture.

Claim 26 (original): The process of claim 25, wherein the motility inhibitor comprises a carbonate based motility inhibitor.

Claim 27 (original): The process of claim 26, wherein the carbonate based motility inhibitor comprises $NaHCO_3$, $KHCO_3$, and $C_6H_8O_7 \cdot H_2O$.

Claim 28 (original): The process of claim 27, wherein the carbonate based motility inhibitor comprises 0.097 moles/L of $NaHCO_3$, 0.173 moles/L of $KHCO_3$, 0.090 moles/L $C_6H_8O_7 \cdot H_2O$ in water.

Claim 29 (original): The process of claim 1, wherein the staining mixture further contains a composition which regulates oxidation/reduction reactions intracellularly or extracellularly.

Claim 30 (original): The process of claim 29, wherein the composition which regulates oxidation/reduction reactions intracellularly or extracellularly is selected from the group consisting of pyruvate, vitamin K, lipoic acid, glutathione, flavins, quinones, superoxide dismutase, and superoxide dismutase mimics.

Claim 31 (original): The process of claim 30, wherein the composition which regulates oxidation/reduction reactions intracellularly or extracellularly is selected from the group consisting of pyruvate, vitamin K, and lipoic acid.

Claim 32 (original): The process of claim 31, wherein the composition which regulates oxidation/reduction reactions intracellularly or extracellularly comprises pyruvate at a concentration from about 0.5μM to about 50mM.

Claim 33 (original): The process of claim 32, wherein the composition which regulates oxidation/reduction reactions intracellularly or extracellularly comprises pyruvate at a concentration from about 10mM to about 15mM.

Claim 34 (original): The process of claim 33, wherein the composition which regulates oxidation/reduction reactions intracellularly or extracellularly comprises pyruvate at a concentration of about 10mM.

Claim 35 (original): The process of claim 31, wherein the composition which regulates oxidation/reduction reactions intracellularly or extracellularly comprises vitamin K at a concentration of about 1μM to about 100μM.

Claim 36 (original): The process of claim 35, wherein the composition which regulates oxidation/reduction reactions intracellularly or extracellularly comprises vitamin K at a concentration of about 100μM.

Claim 37 (original): The process of claim 31, wherein the composition which regulates oxidation/reduction reactions intracellularly or extracellularly comprises lipoic acid at a concentration of about 0.1mM to about 1.0mM.

Claim 38 (original): The process of claim 31, wherein the composition which regulates oxidation/reduction reactions intracellularly or extracellularly comprises lipoic acid at a concentration of about 1.0mM.